

TRENCH TRANSISTOR WITH SUPERIOR GATE DIELECTRIC**ABSTRACT OF THE DISCLOSURE**

A trench transistor with lower leakage current and higher gate rupture voltage. The gate oxide layer of a trench transistor is grown at a temperature above about 1100 °C to reduce thinning of the oxide layer at the corners of the trench. In a further embodiment, a conformal layer of silicon nitride is deposited over the high-temperature oxide layer, and a second oxide layer is formed between the silicon nitride layer and the gate polysilicon. The first gate oxide layer, silicon nitride layer, and second oxide layer form a composite gate dielectric structure that substantially reduces leakage current in trench field effect transistors.

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